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Appl. No. 10/590,499

March 5, 2008

REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 34-70 are in the case.

I. THE 35 U.S.C. §112, SECOND PARAGRAPH, REJECTIONS

Claim 36 stands rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite for the reasons detailed in paragraph 1 on page 2 of the Action. In response, claim 36 has been amended to specify that the limitation "20 wt%" is in reference to water. Basis for this amendment appears at page 3, lines 12 and 13. No new matter is entered.

Claims 48 and 49 stand rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite for the reasons detailed in paragraph 2 on page 2 of the Action. In response, claim 48 has been amended so as to be dependent on claim 46, and claim 49 has been amended so as to be dependent on claim 45. Again, no new matter is entered. Withdrawal of the outstanding formal rejection is now respectfully requested.

II. THE OBVIOUSNESS REJECTIONS

Claims 34-40, 42-47 and 50-70 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over U.S. Patent 6,521,783 to Wegman et al. (Wegman '783). Claim 41 stands rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Wegman and further in view of U.S. Patent 5,218,140, also to Wegman (Wegman '140). Those rejections are respectfully traversed.

Claim 34 claims a carbonylation process for the production of a carbonylation product. The process comprises contacting carbon monoxide with a feed comprising an

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alcohol and/or a reactive derivative thereof in the vapour phase using an heterogeneous heteropolyacid catalyst comprising one or more metal cations selected from Cu, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd and Pt. Also present in the feed is at least 0.5wt% water.

Wegman '783 describes a two-step process in which in step (a) synthesis gas (a mixture of carbon monoxide and hydrogen) is converted to methanol and/or dimethyl ether and, in step (b), the methanol and/or dimethyl ether is carbonylated to a carbonylation product. Step (a) requires a catalyst. According to Wegman '783, the catalyst may be an alcohol synthesis and/or alcohol dehydration catalyst. If an alcohol synthesis catalyst is used, methanol is formed. If an alcohol dehydration catalyst is also used, methanol is dehydrated to dimethyl ether and water. In step (b), a carbonylation catalyst selected from solid super acids, heteropolyacids, zeolites and molecular sieves is used.

Thus, in Wegman, water is only present in the feed to the carbonylation reactor when both methanol and dimethyl ether are also present. In contrast, it has been found, according to the present invention, that if a heteropolyacid catalyst is used in the carbonylation of, for example, methanol, the productivity/activity may be increased if water is added to the methanol feed. This is demonstrated in Tables 2 and 3 on page 8 of the specification. Thus, the present Applicant has demonstrated a benefit of co-feeding water to a heteropolyacid catalysed carbonylation process.

Wegman '783 discloses the presence of water when both methanol and dimethyl ether are also present. It does not disclose or suggest the presence of water with, for example, a single feed component such as methanol. Thus, it would not be possible for a person of ordinary skill to deduce that any benefits would ascribe to the presence of

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water for an alcohol feed. Furthermore, Wegman '783 discloses a choice of carbonylation catalysts. Wegman offers no suggestion that the presence of water would have any benefit in respect of the use of any of the catalysts disclosed, let alone any benefits with respect to heteropolyacid catalysts. There are no examples in Wegman '783 in which methanol, either alone or in combination with dimethyl ether, and in the presence of water are fed to a heteropolyacid catalyst. Thus, it would not be possible for one of ordinary skill to establish that any advantages would arise from the use of the combination of a heteropolyacid catalyst and water.

Although Wegman contemplates feeding methanol, dimethyl and water to a carbonylation catalyst, there is no disclosure of the possible or potential effects of water in the carbonylation feed. The person of ordinary skill would therefore not expect any benefits to be derived by the presence of water in a combined feed, let alone a single component feed. Therefore, it would not be possible for one of ordinary skill, based on Wegman, to conclude that the productivity/activity of a heteropolyacid catalyst could be improved by the presence of water in the feed to, for example, the carbonylation of methanol.

As one of ordinary skill would not have been motivated to arrive at the subject matter of claims 34-40, 42-47 and 50-70 based on Wegman '783, it is clear that no *prima facie* case of obviousness has been generated in this case. Withdrawal of the obviousness rejection based on Wegman '783 is accordingly respectfully requested.

Referring to the rejection of claim 41 as allegedly unpatentable over Wegman '783 in view of Wegman '140, claim 41 is dependent, indirectly, on claim 34 and therefore incorporated the features of claim 34 which define patentable subject matter

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for the reasons discussed above. Claim 41 is therefore patentable for the same reasons as discussed above in relation to claim 34.


In summary, it is clear that one of ordinary skill in the art would not have been motivated to arrive at the presently claimed carbonylation process based on the Wegman '783 and '140 patents, either when taken singly or in combination. Absent any such motivation, it is believed that a *prima facie* case of obviousness has not been generated in this case. Reconsideration and withdrawal of the outstanding obviousness rejections are accordingly respectfully requested.

Favorable action is awaited.

Respectfully submitted,

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